Winery Energy Saver Toolkit
Industry Profile
Shaw+Smith – Solar PV & Hot Water (cogeneration)

Background

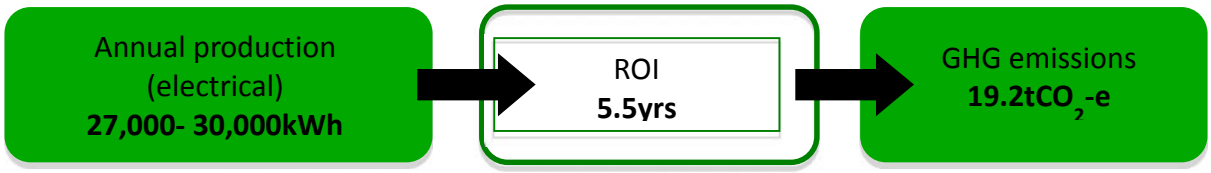
Shaw+Smith began in 1989, set in the picturesque Adelaide Hills, producing their specialty wines, Sauvignon Blanc, M3 Chardonnay, cool climate Shiraz and Pinot Noir. Shaw+Smith acknowledge the importance of sound environmental practices and aim to cut energy consumption and greenhouse emissions. To help achieve these goals in 2013 they participated in the Winery Energy Saver Toolkit (WEST) program, under the Energy Efficiency Information Grant Program, funded by the Australian Government to help identify energy efficiency opportunities.

Opportunities

The location of Shaw+Smith provides ideal conditions for the installation of solar. Solar opportunities can be broken into three categories of options: Solar photovoltaic (PV) system, Solar Hot Water (SHW) and Solar Cogeneration. Based on a project cost of $62,000 each of these options have been scoped.

Option 1: Solar photovoltaic system

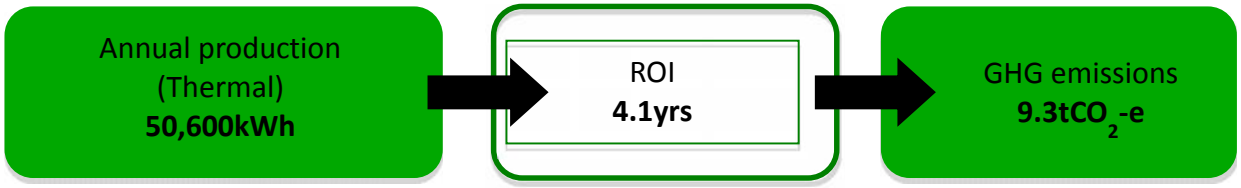
Currently Shaw+Smith consume just under 425,000kWh in electricty per year. The project cost allows for a 20kW solar PV system.



This system has the potential to offset 7% of the sites electricity consumption and GHG emissions.

Option 2: Solar hot water system

LPG is used at Shaw+Smith for the generation of hot water, currently 19m^3 (135,500kWh) of LPG are consumed per year. The proposed 13 thermal collector system will be able to produce 37% of the hot water required by the site.



The drawback on this system is that it does not produce the required 90°C water required, thus the Boiler will still be used to top up the hot water temperature.

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Option 3: Solar Cogeneration

Solar cogeneration is a relatively new technology that optimises the power of the sun by creating both electricity and hot water from a combined solar PV and thermal module. Traditional solar PV systems convert approximately 15% of the sun's energy into electricity and waste heat. Solar cogeneration technology (manufactured by US company Cogenra and supplied locally by ZEN Energy) is able to capture this waste heat and transforms it into a useable form, this allows for 75% of the energy delivered by the sun to be converted into both electricity and hot water.[1] The way the system is mounted allows for tracking of the sun to maximise exposure and therefore production.

Annual production
Electrical **8,000kWh**
Thermal **57,000kWh**

→

ROI
3.1yrs

→

GHG emissions
15.7tCO$_2$-e

In application for Shaw+Smith this would allow for a reduction in electrical and LPG consumption of 3% and 42% respectively. Additionally this system will reduce the load on the transformer allowing for the projected future growth of the winery and provides a point of difference for marketing.

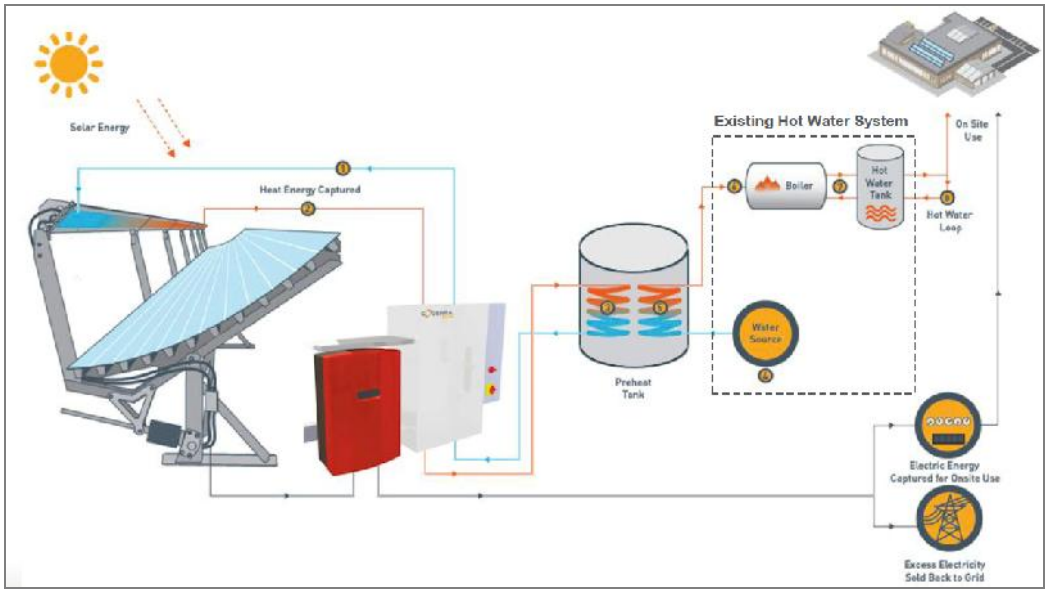

Figure 1. Diagramatic example of the solar cogeneration system

Measures Implemented & Outcomes

Shaw+Smith worked with the supplier to undertake a site survey and business case assessment to determine the costs, paybacks and cashflow analysis of each option.

The three solar options each have their merits, the choice is dependent on the needs of the business. For Shaw+Smith, Option 3 provides the greatest savings as hot water is the largest use of LPG onsite and Solar Cogeneration provides the largest savings in terms of energy consumption and the shortest ROI.

[1] For more information visit http://www.cogenra.com/innovation/solar-cogeneration/ .

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